



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/786,503	02/26/2004	Akira Yoda	Q79994	4316
23373 7590 07/21/2008 SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			EXAMINER WASHINGTON, JAMARES	
			ART UNIT 2625	PAPER NUMBER
			MAIL DATE 07/21/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/786,503

Applicant(s)

YODA, AKIRA

Examiner

JAMARES WASHINGTON

Art Unit

2625

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 May 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 2 and 4-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2 and 4-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/CIS/800)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date 01/3/2008, 02/26/2008

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on May 27, 2008 has been entered.

Response to Amendment

Amendments and response received May 27, 2008 have been entered. Claims 1, 2 and 4-21 are currently pending. Claims 1, 14 and 17 have been amended. Applicant's amendments and response are addressed hereinbelow.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 2, 4-11 and 13-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rhoads (US 20030128861 A1) in view of Paul Lapstun et al (US 7132612 B2).

Regarding claim 1, Rhoads discloses print generating device for hiddenly embedding first information in an image to acquire an information-attached image (Fig. 2 and ¶ [107]) and generating a print on which said information-attached image is recorded (¶ [160]), comprising:

embedding means (¶ [177]) for hiddenly embedding the first information in the image (¶ [270]); and

information attaching means for attaching second information (Fig. 2 numeral 224 and ¶ [107]), which indicates that said first information is embedded in said image (Fig. 2 numeral 216 and ¶ [103]), to said print wherein said information attaching means is means to attach said second information to said print by a visual mark (¶ [19], ¶ [23], and ¶ [413]). As explained in paragraph 19, the watermark structure can have multiple components, each having different attributes including location and orientation. For example, one component may carry a message, while another component may serve to identify the location or orientation of the watermark similar to a "calibration pattern" as previously rejected. While described here as watermark components, one can also construe the components to be different watermarks. This enables the watermark technology described throughout the reference to be used in applications using two or more watermarks. The calibration patterns have been described as adjuncts to digital watermarks, facilitating their detection. Therefore, the "calibration pattern" merely stands in for the fact that an additional watermark can be used to realize the same functionality of the "calibration pattern" (as stated above) *See also arguments presented in advisory action dated 04/15/2008*);

Rhoads fails to expressly disclose wherein the second information has a shape that facilitates detection of geometrical distortions caused by tilt of an optical axis of a photographing lens for taking the image.

Lapstun et al, in the same field of endeavor teaches embedded information (Fig. 5 physical representation of a netpage tag) which has a shape that facilitates detection of geometrical distortions caused by tilt of an optical axis of a photographing lens for taking the image (Col. 10 lines 40-46 wherein the fixed target structures allow a sensing device to infer the "tag's" three-dimensional orientation relative to the sensor. Also see Col. 55 lines 34-39).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the second information, which indicates that first information if embedded, as disclosed by Rhoads has a shape that facilitates detection of geometrical distortions caused by tilt of an optical axis of a photographing lens as taught by Lapstun et al to provide the system with the degree of tilt for correction thus the first information can be correctly interpreted.

Regarding claim 2, Rhoads discloses the print generating device as rejected in claim 1 above, wherein said information attaching means is means to attach said second information to said print by hiddenly embedding said second information in said image in a different embedding manner than the manner in which said first information is embedded ("The watermark components may be defined, embedded and extracted in different domains" at ¶ [22], "In the embodiment earlier-described, the calibration pattern is printed as a visible artistic element of the security document. However, the same calibration effect can be provided subliminally if desired" at ¶ [351]).

Regarding claim 4, Rhoads discloses an information detecting device ("The detector looks for the watermark signal..." at ¶ [24]) comprising:

input means for receiving photographed-image data obtained by photographing an arbitrary print...with image pick-up means ("The detector performs a series of preprocessing operations on the native image...It begins by filling memory with one or more frames of native image data..." at paragraph [167], "In applications where a camera captures an input image..." at ¶ [168], "A digital camera or scanner 43 may be used to capture the target image for the detection process described above" at ¶ [252]).

judgment means for judging whether or not second information, which indicates that first information is embedded in an image, is detected from said photographed-image data ("Indeed, the use of such calibration patterns to register both watermark and visible structure image data for recognition is an important economy that can be gained by integration of a visible structure detector and a watermark detector into a single system" at ¶ [383]), and

processing means for performing a process for detection of said first information on only the photographed-image data from which said second information is detected ("To extract the message, the reader captures a representation of the signal suspected of containing a watermark and then processes it to detect the watermark and decode the message" at ¶ [78]). The location of the watermark is given from the second information as rejected in claim 1 above. The reader captures only the part suspected of containing a watermark (from the information given by the second information/watermark) and processes it accordingly. Examiner maintains previous

grounds of rejection incorporated herein from previous office action explaining further challenges of the capture/read processing with further explanation given above.

Regarding claim 5, Rhoads discloses the information detecting device as rejected in claim 4 above, further comprising distortion correction means for correcting geometrical distortions contained in said photographed-image data when said processing means is means to perform detection of said first information as a process for detection of said first information ("...dealing with the different types of distortion...cameras have different sensitivities to light. In addition, their lenses have different spherical distortion..." at paragraph [183]), wherein said judgment means and said processing means are means to perform said judgment and said detection on the photographed-image data corrected by said distortion correction means ("At the close of the pre-processing stage (4.1 Detector Pre-Processing, at ¶ [166]), the detector has selected a set of blocks for further processing..." at ¶ [184]).

Regarding claim 6, Rhoads discloses the information detecting device as rejected in claim 5 above, wherein said distortion correction means is a means for correcting geometrical distortions caused by a photographing lens provided in said image pick-up means or geometrical distortions caused by a tilt of an optical axis of said photographing lens relative to said print ("...the watermarked image is likely to undergo several transformations...Some of these transformations include: scaling, rotation, inversion, flipping differential scale, and lens distortion" at ¶ [160]. "When building a detector implementation for a particular application, the

developer may implement counter-measures to mitigate the impact of the types of transformations and distortions..." at ¶ [161]).

Regarding claim 7, Rhoads discloses the information detecting device as rejected in claim 4 above, wherein said processing means is a means for performing a process for transmitting said photographed-image data to a device that detects said first information, as a process for detection of said first information, only when said judgment means detects said second information from said photographed-image data ("...detection watermark..." Fig. 2, numeral 216, "The detection watermark is specifically chosen to assist in identifying the watermark and computing its orientation in a detection operation" at ¶ [103]. Flow chart depicted in Figure 12 shows the transmission of image data after detection of a "detection watermark explained at ¶ [159].)

Regarding claim 8, Rhoads discloses an information-detecting device as rejected in claim 4 above with the print-generating device as rejected in claim 2 above (Desirably, the visible structure detector and the watermark detector are integrated together as a single hardware and/or software tool" at ¶ [378]). Claim 2 rejection above embodies both visible and invisible marks, therefore covering the use of visible marks.

Regarding claim 9, Rhoads discloses the information-detecting device as rejected in claim 8 above, further comprising the distortion correction means and processing means as rejected in claim 5.

Regarding claim 10, Rhoads discloses the information-detecting device as rejected in claim 9 above, wherein the distortion correction means is a means for correcting geometrical distortions as rejected in claim 6.

Regarding claim 11, Rhoads discloses the information detecting device wherein the image pick-up means is a camera provided in a portable terminal as rejected in claim 4 above.

Regarding claim 13, Rhoads discloses the information detecting device as rejected in claim 4, wherein said first information is location information representing a storage location of audio data correlated with said image ("Watermarking can also be used in various "description" or "synthesis" language representations of content, such as Structured Audio, Csound, NetSound...by specifying synthesis commands that generate watermark data as well as the intended audio signal" at ¶ [391]), and which further comprises audio data acquisition means for acquiring said audio data, based on location information ("Finally, a reader extracts a message in the watermark signal from the combined signal..." at ¶ [24]. "...digital watermarking is applied to media such as...audio signals" at ¶ [15]).

Regarding claim 14, Rhoads discloses the print generating method carried out by the print generating device as rejected in claim 1 above.

Regarding claim 15, Rhoads discloses the print generating method carried out by the print generating device as rejected in claim 2 above.

Regarding claim 16, Rhoads discloses the information detecting method carried out by the information detecting device as rejected in claim 4 above.

Regarding claim 17, Rhoads discloses a program for causing a computer to execute the method as rejected in claim 14 above ("Fig. 20 illustrates an example of a computer system that serves as an operating environment for software implementations of the watermarking systems described above. The embedder and detector implementations are implemented in C/C++ ..." at ¶ [245]).

Regarding claim 18, Rhoads discloses the program as rejected in claim 17 above and incorporating the method as rejected in claim 2 under the same grounds of rejection as presented in claim 17 rejection.

Regarding claim 19, Rhoads discloses the program as rejected in claim 17 above.

4. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rhoads and Lapstun as applied to claim 4 above, and further in view of Yamagata (US 20020018139 A1).

Regarding claim 12, Rhoads discloses an information detecting device as rejected in claim 4 above, wherein said image pick-up means is equipped with display means for displaying said print to be photographed ("A monitor 1247 or other type of display device is also connected

to the system bus 1223 via an interface..." at ¶ [254]. Fig. 20 shows the camera 1243 directly connected to the camera interface, which is a part of the system bus 1223 that leads to the video adapter 1248. The monitor 1247 is connected to the system bus via the video adapter 1248).

Rhoads fails to teach tilt detection means for detecting a tilt of an optical axis of said image pick-up means relative to print, and display control means for displaying information representing the tilt of said optical axis detected by said tilt detection means, on said display means.

However, Yamagata teaches the above tilt detection means ("An image measurement apparatus according to a preferred embodiment of the present invention comprises a camera, a control mechanism for controlling tilt angle of optical axis of the pertinent camera...and a device for detecting tilt angle of optical axis..." at ¶ [29]).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to include the tilt detection device taught by Yamagata in the image pick-up device of Rhoads so that "detecting accuracy is enhanced" when capturing an image of a watermark. Since the watermark detector performs a series of correlation or other operations on the captured image to detect the presence of a watermark, it is critical to get an accurate representation of the mark.

In addition Rhoads teaches a video adapter (Fig. 20, numeral 1248) for controlling what will be displayed on the monitor.

However, Rhoads does not teach display control means for displaying information representing the tilt of said optical axis detected by said tilt detection means, on said display means.

However, Yamagata discloses the above control means ("An image processing signal stored in the image memory 43 is computed in an image CPU 44, and outputted to an image monitor through a D/A (Digital/Analog) converter 45 to display an image. The aforesaid host CPU 32 conveys image data to the image CPU 44 and to a motor controller 36 and at the same time performs a series of jobs including adjustment of optical axis..." at paragraph [77]) for displaying information representing the tilt of said optical axis.

It would have been obvious at the time the invention was made to one of ordinary skill in the art to use the D/A converter as taught by Yamagata as the video adapter disclosed by Rhoads to provide a way of displaying the information representing the tilt of said optical axis detected by said tilt detection means because it would allow the viewer to see the through image of the camera, an image to be processed, and a result of processing to compare the corrected image with the original.

5. Claims 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rhoads and Lapstun as applied to claims 2 and 1 respectively, and further in view of well known prior art.

Regarding claim 20, Rhoads suggests the print generating device according to claim 2, wherein the embedding manner of the second information is easier to process than the embedding manner in which the first information is embedded (§ [19]) with reference to signal strength of the watermarks). Rhoads states that two watermarks may have differing signal

strengths, which is directed towards the "reading level" or processing of the particular watermark.

Rhoads does not expressly state that the second information is easier to process than the first information although suggesting this is indeed possible.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the second information, embedded in the image, easier to process or "read/decode" than the first information because the second information embedded in the image merely contains information to alert the user and reader to further information embedded within the image and would therefore reduce processing time.

Regarding claim 21, Rhoads suggests the print generating device according to claim 1, wherein the second information is low-frequency information (§ [105]).

Rhoads does not expressly state that the second information is low-frequency information although suggesting this is indeed possible.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made for the second information according to claim 1, wherein the second information is attached by a visual mark, to be embedded utilizing low-frequency information because, as stated by Rhoads in paragraph 105, "... if the [impulse functions] are located in a low frequency range, they may be noticeable in the watermarked image". Since the second information is noticeable and should be easier to process, it would be obvious to utilize low frequency information as the second information.

Response to Arguments

6. Applicant's arguments with respect to claims 1, 14 and 17 have been considered but are moot in view of the new ground(s) of rejection.

Note - ¶ [413] for the argument regarding the second information not being a visual mark.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAMARES WASHINGTON whose telephone number is (571)270-1585. The examiner can normally be reached on Monday thru Friday: 7:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, King Poon can be reached on (571) 272-7440. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/King Y. Poon/
Supervisory Patent Examiner, Art Unit 2625

Jamare Washington
Assistant Examiner
Art Unit 2625

/J. W./
Examiner, Art Unit 2625

/Jamare Washington/
Examiner, Art Unit 2625

July 14, 2008